

# Peter's Woods Provincial Nature Reserve

Government  
Publications

CAZON  
NR  
-77P28


## Master Plan



Ontario

Ministry of  
Natural  
Resources





Digitized by the Internet Archive  
in 2022 with funding from  
University of Toronto

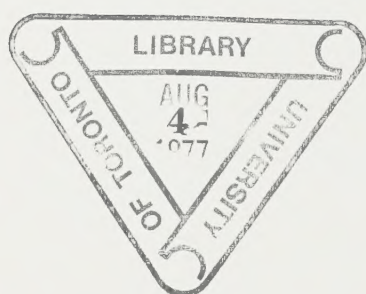
<https://archive.org/details/31761115482754>

CA20NNR

-77P28

Peter's Woods  
Provincial Nature Reserve

Master Plan





Office of the  
Minister

Ministry of  
Natural  
Resources

416/965-1301

Whitney Block  
Queen's Park  
Toronto Ontario

MINISTER'S APPROVAL STATEMENT

Relatively undisturbed woodlots, which typify vegetational communities prior to rural development, are a rarity in Southern Ontario. When such an uncommon feature is discovered, it is important to acknowledge its uniqueness and to preserve the area. Peter's Woods, a mature maple-beech forest, is an example of such a specialized environment.

Peter's Woods is designated as a nature reserve under the Provincial Parks Classification System with the intention of allowing this rare life science feature to evolve naturally so that the effects of environmental change can be measured. Through the implementation of the strategies outlined in this master plan, Peter's Woods Provincial Nature Reserve will be preserved for the cultural, educational and recreational benefit of the people of Ontario. Therefore, in accordance with The Provincial Parks Act, Sections 1d and 7a, I am pleased to approve the Peter's Woods Provincial Nature Reserve Master Plan as the official policy for the future preservation and management of the nature reserve.

The contribution of the Willow Beach Field Naturalist Club in bringing the significance of Peter's Woods to the attention of the government and assisting with the preparation of the master plan is gratefully acknowledged. I look forward to their continued support in the future management of the area and encourage the involvement of other interest groups in similar endeavours.

A handwritten signature in dark ink, appearing to read "F. Miller".

Hon. Frank S. Miller  
Minister

June, 1977





## Contents

Minister's Approval Statement	
Figures	
Metric Measures	
Introduction	1
Purpose of a Master Plan	2
Nature Reserve Area	3
Location	3
Legal Status	3
Adjacent Land Use	3
Access and Transportation Routes	3
Regional Context	5
Regional Planning	5
Regional Recreational Opportunities	6
Biophysical Resources	9
Climate	9
Geology, Geomorphology and Topography	9
Vegetation	10
Hydrology	14
Wildlife	14
Cultural Resources	15
Prehistory	15
Early Settlement	15
Environmental Significance	16
Environmental Analysis	17
High Constraint Areas	17
Moderate Constraint Areas	17
Low Constraint Areas	19
Nature Reserve Policy	20
Goal	20
Objectives	20
Classification	21
Zoning	21

Development Program	23
Access Zone	23
Fencing and Buffer Planting	23
Interpretive Trail	24
Visitor Services	26
Communication	26
Interpretation	26
Outdoor Education	27
Recreational Programming	27
Research	27
Park Operation and Management	28
Staff	28
Maintenance	28
Recreational Management	29
Resource Management	30
Forest and Vegetation Management	30
Wildlife Management	31
Environmental Impact Monitoring	32
Master Plan Review	33
References	34



## Figures

1	Regional Context	4
2	Recreational Opportunities of the Northumberland County Forest	8
3	Geomorphology and Topography	11
4	Vegetation Complexes	12
5	Environmental Constraints	18
6	Master Plan and Zoning	22

## Metric Measures

<u>Unit</u>	<u>Equivalent</u>
centimetre (cm)	0.3937 inches
metre (m)	3.2808 feet
kilometre (km)	0.6214 miles
square kilometre (sq km)	0.3861 square miles; 100 ha
hectare (ha)	2.4710 acres
cubic metre (cu m)	35.3148 cubic feet
litre (l)	0.2200 gallons
kilogram (kg)	2.2046 pounds
kilowatt (kw)	1.3410 horsepower
degrees Celsius ( $^{\circ}$ C)	$^{\circ}$ C $\times \frac{9}{5} + 32 =$ degrees Fahrenheit ( $^{\circ}$ F)

## Introduction

The goal of the Provincial Parks System is to provide a variety of outdoor recreation opportunities and to preserve provincially significant natural, cultural and recreational environments in a system of provincial parks. The nature preservation component of this goal is recognized in all six classes of provincial parks, but it is fundamental to the nature reserve classification.

The nature reserve classification is designed to identify those unique and representative biophysical features in Ontario worthy of protection for their natural values. Parks classified as nature reserves will be designated where representation of significant earth and life science features does not occur in the other classes of provincial parks and where the incorporation of isolated or specialized environments is necessary.

Peter's Woods Provincial Nature Reserve is representative of a relatively natural forest complex and an adjacent non-forested community in Southern Ontario. It has the potential to provide an excellent example of this particular element of the original regional vegetation cover, and as such, to contribute to the target for representation of "special and representative" life science features in the Provincial Nature Reserve System.

Peter's Woods was established as a provincial nature reserve through an implementation strategy which integrated the activities of the Willow Beach Field Naturalist Club, a private conservation group, with those of the Ontario Ministry of Natural Resources. The Willow Beach Field Naturalist Club provided financial assistance for the acquisition of the property and contributed significantly to the master planning of the nature reserve.

Peter's Woods has been named in commemoration of Mr. A.B. "Peter" Shultz, a naturalist, conservationist and leading member of the Willow Beach Field Naturalist Club.

## Purpose of a Master Plan

A provincial park master plan is a document which establishes the policy guidelines for the planning, preservation, development and management of a park. The major purposes of a master plan are as follows:

- A master plan is a further refinement of systems planning related to the development and management of a particular park in relation to existing and proposed recreational opportunities in a given area. It defines the role and significance of the park within the total park system.
- A master plan examines the region or market area in which the park is located to ascertain the existing supply of recreational opportunities, the type and extent of facilities offered, the transportation linkages and population projections in relation to the characteristics of the potential park user and resultant demand for the park site.
- A master plan analyses all biophysical and cultural aspects of the park, thereby ensuring that provincially-significant and sensitive environments are not disturbed.
- A master plan assesses the environmental limitations of the site and endeavours to ensure that these limitations are not overlooked when development occurs.
- A master plan defines the classification and zoning of the park, thereby indicating the nature and intensity of facilities and variety of recreational opportunities to be offered.
- A master plan formulates the goal for the park and defines the objectives by which this goal may be achieved. This establishes the individual character of the park and its place in the total provincial parks system.
- A master plan outlines development alternatives permissible within the limitations mentioned above and recommends an appropriate plan to be implemented.
- A master plan defines a visitor services program from which a process evolves to enable the park visitors to enjoy the features and attributes of the environment which they visit.
- A master plan establishes management and site planning guidelines.



## Nature Reserve Area

### Location

Peter's Woods Provincial Nature Reserve is located in the Township of Haldimand, Northumberland County. The property lies in Lot 14 and Lot 15 of Concession VIII and has a land area of 33.18 ha.

### Legal Status

Under the authority of The Provincial Parks Act, Peter's Woods has been established as a provincial nature reserve in the Revised Regulations of Ontario, 1970 (Ontario Regulation 741/76, September 13, 1976).

### Adjacent Land Use

All of the lands immediately adjacent to the nature reserve are in private ownership. To the north and west, agricultural operations are the predominate land use, while to the south the land supports extensive plantations of coniferous trees. The property to the east sustains a cedar forest, which is the natural extension of the vegetative community in the eastern portion of the nature reserve.

### Access and Transportation Routes

Highway 401 is the major route for east-west traffic movement in Northumberland County. The freeway has interchanges serving the communities of Port Hope, Cobourg, Grafton, Colborne and Brighton. North-south traffic flow in the region is accommodated by a system of collector roads. Highway 28 serves traffic between Port Hope and Peterborough and also facilitates the recreation traffic associated with Rice Lake. Highway 30 connects Brighton and Campbellford, and Highway 45, generally regarded as a local roadway, joins Cobourg and Norwood.

Peter's Woods is accessible from Highway 45 by following County Road 29 to Burnley or from Highway 401 by following the Centreton exit and County Road 23. A series of local rural roads connect these two county roads to the nature reserve (Figure 1).

Figure

**1**

## Regional Context



## Regional Context

### Regional Planning

In the past few years, since the provincial government's announcement of the Toronto-Centred Region concept, the western section of Northumberland County has been experiencing pressures to expand, particularly in the Port Hope-Cobourg area. The fact that this area is located on a major east-west transportation corridor and is situated within commuting distance of Toronto and Oshawa has also contributed to these increased development pressures.

In an effort to deal with these pressures and to provide an appropriate framework within which planning and economic growth can take place in the region, a joint provincial-municipal task force prepared a report on The Preferred Development Strategy for the County of Northumberland. Although it is not the county's official plan, the strategy does establish a set of guidelines which will affect land use planning policies at different levels within the area.

Essentially, the task force proposes a development strategy for the county which would double its population by the end of the century to approximately 125,000. It recommends that all new people be accommodated in the county's major urban centres, Port Hope, Cobourg, Brighton, Campbellford and Colbourne. The task force also recommends that particular attention be paid to preserving the county's prime agricultural and recreational resources.

The Peter's Woods area will be affected only moderately by the urban and economic growth proposed by the development strategy. Aside from the moderate growth of the small centres near the nature reserve, such as Centreton, Fenella, Burnley and Oak Heights, the area will be oriented toward the rural aspects of the strategy. In this regard, it will be directed to continue to provide the opportunity for farming, for preserving a rural way of life and for improving the county recreational base.

There is one aspect of the report, however, which does have particular relevance to Peter's Woods and its status as a provincial nature reserve. The strategy addresses the issue of the over-utilization and improper use of the natural environment and provides guidelines to protect the various sensitive components of the natural environment. The essence of the proposed strategy is that within certain defined areas, the uses of the land would be restricted on the basis of environmental considerations. The type and extent of the environmental restrictions would be dependent upon the basic characteristics of the area and the priority land use assigned to it, (i.e. urban, agricultural or recreational).



The following three levels of environmental considerations are recommended:

- Nature Preserve - This would be an area where the total exclusion of all land uses is required in order to preserve its character and function in the natural environmental system. In principle, this designation would be applied to the most sensitive and environmentally-significant areas.
- Environmental Restraint Area - This is an area where some restraints on the use of the land would be necessary in order to avoid detrimental changes to the natural environment. Examples of such areas would include the watershed areas, shorelines, hazard lands, wildlife habitat and scenic areas.
- General Environmental Standards - General environmental standards are those which apply across the province, such as the policies concerning pollution of streams, land, air or the protection of water supplies for sanitation purposes.

By definition, nature preserves are very similar in approach and level of concern to the philosophy of the Provincial Nature Reserve System. Therefore, it is recommended that the land use policy-planning that is part of the process of implementation of the development strategy give careful consideration to assigning nature preserve status to Peter's Woods and the surrounding area. Under this designation an appropriate buffer area, fundamental to the protection of the ecological integrity of Peter's Woods, would be established and maintained. Buffering against adverse environmental impacts is essential for the long-term protection and management of a nature reserve. The effects of environmental changes occurring outside the nature reserve must be considered: factors such as surface run-off, proximity to the source of pollutants and vegetative disease are critical. Also, the restriction or control of access to the reserve is an extremely important function of a buffer area.

#### Regional Recreational Opportunities

According to the Ontario Land Inventory, the land capability for recreation in Northumberland County is generally moderate-to-low, with a few high-ranking locations along the shoreline of Rice Lake and Lake Ontario. Similarly, the Canada Land Inventory indicates that high capability sections of the shoreline areas are limited and that the area has a basically moderate-to-low capability ranking. These ratings are based on the capability of an area to attract and sustain intensive recreational use.

There are, however, a variety of public and private recreational facilities located in Northumberland County. Presqu'ile Provincial Park, situated on Lake Ontario just south of the Town of Brighton, and Ferris Provincial Park, located on the Trent River near Campbellford, provide both camping and day-use recreational opportunities, including swimming, boating and fishing. A number of

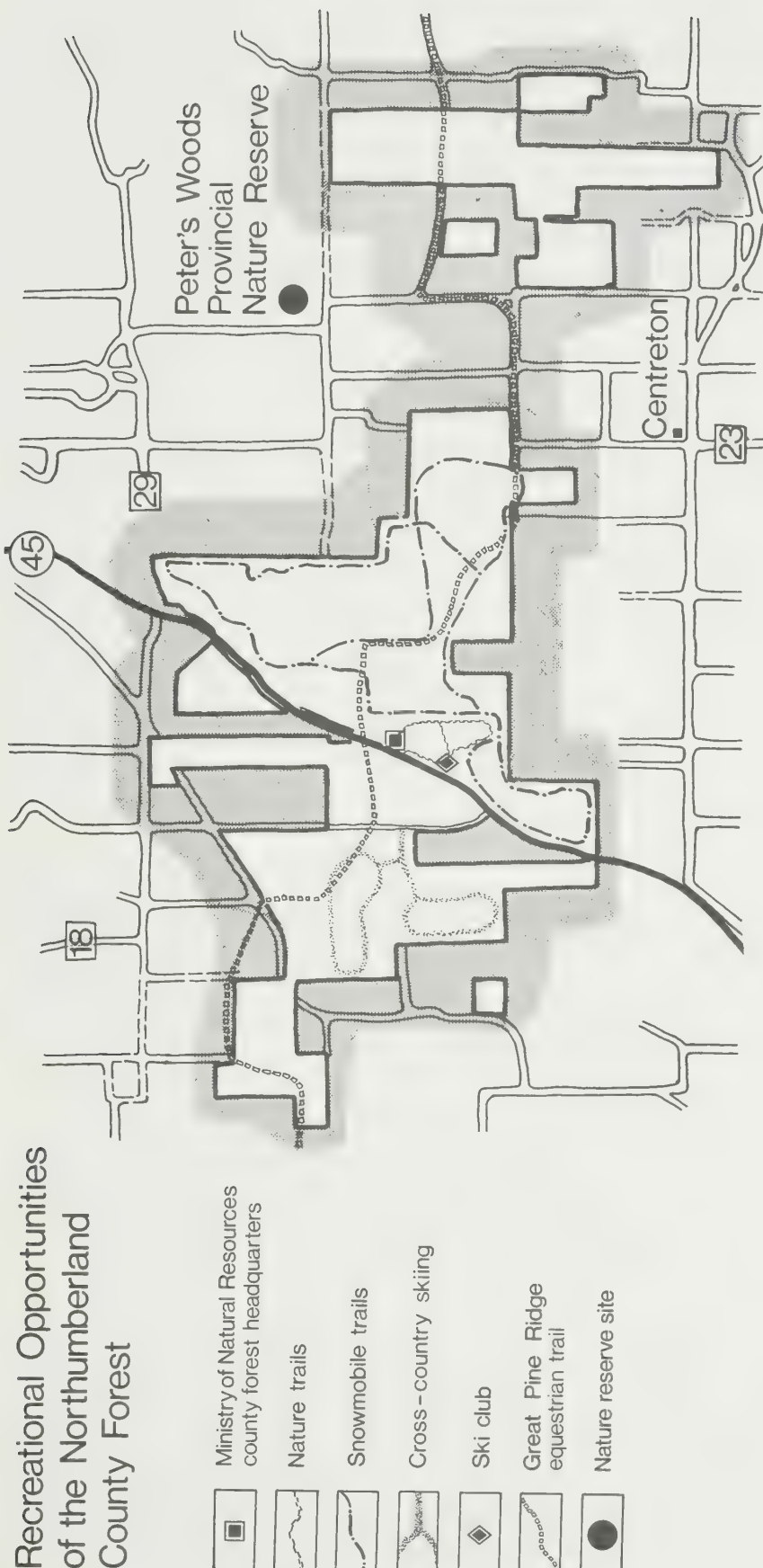
conservation areas, including Richardson's Lookout, Garden Hill, Sylvan Glen, Port Hope, Cobourg, Balls Mill, Rice Lake and the Ganaraska Forest Resource Management Area, are operated in the region by the Ganaraska Conservation Authority and provide a variety of day-use opportunities geared mainly to local residents. There are also several private and commercial facilities in the county, which are generally associated with the shorelines of Lake Ontario, Rice Lake and the Trent River System.

The major facility providing the opportunity for recreational activity in the vicinity of Peter's Woods is the Northumberland County Forest. The forest is managed by the Ontario Ministry of Natural Resources under an agreement between the Minister and Northumberland County. The general management policy for the county forest is to use the resource for a number of different purposes in addition to the production of timber. The recreational opportunities provided under this multiple-use concept include snowmobile trails, nature trails, a downhill skiing hill, cross-country skiing trails, horseback-riding trails and hunting (Figure 2).

Figure

2

# Recreational Opportunities of the Northumberland County Forest



scale





## Biophysical Resources

The following is a brief description of the major biophysical factors influencing the ecology of the nature reserve. Combinations of the physical elements of geology, hydrology, biology, soils and climate produce both constraints and potential capabilities which must be considered in the nature reserve planning process.

### Climate

The climate of the Peter's Woods area is characterized by a relatively warm summer, with moderate rainfall, a long frost-free period and a cool winter with heavy snowfall.

The average temperature for January, the coldest month, is  $-7^{\circ}\text{C}$ , while the warmest month, July, has an average temperature of  $20^{\circ}\text{C}$ . The frost-free period, between the second week in May and the last week in September, has a mean length of 137 days. The mean length of the growing season is 194 days. Approximately 78.74 cm of precipitation can be expected in a normal year, with the mean annual rainfall for the area being 60.96 cm and the mean annual snowfall 177.80 cm. The prevailing winds affecting the region are from the southwest.

### Geology, Geomorphology and Topography

The bedrock underlying Peter's Woods Provincial Nature Reserve is Verulam Formation limestone of the Middle Ordovician Age (Hewitt and Liberty, 1972). The Verulam Formation consists of about 60 m of thinly to medium-bedded aphanitic to medium crystalline limestone and interbedded grey-green shale (Liberty, 1969, p.48). It is relatively soft, highly fossiliferous and easily disintegrated.

This bedrock was apparently laid down during a time, some 460,000,000 years ago, when the area was inundated by a huge intra-continental sea joining Hudson Bay and the Great Lakes. The alternating limestone and shale layers in the Verulam Formation indicate changing sea levels during deposition, and the high concentration of fossils reflects an environment highly conducive to the survival of ancient sea life.

In the long interval since the limestone bedrock was deposited, erosional and depositional processes have been altering the landscape continually. At least four times during the Quaternary period, continental glaciers spread southward from Labrador and Hudson Bay, covering all of Ontario and most of Canada east of the Western Cordillera. Such huge masses of ice, up to 1.5 km deep, exerted a tremendous force on the earth over which they passed, depressing the earth's surface and scouring soil, rock and vegetation from one area and depositing it elsewhere. Material was either deposited in

an unsorted fashion, as with drumlins and moraines, or was washed and sorted by glacial meltwater into well-defined layers or strata, as in eskers, kames and outwash plains.

The nature reserve itself is situated on the Peterborough Drumlin Field, an outwash and till plain dotted with drumlins (Gravenor, 1957). It is also very close to the northern flank of the Oak Ridges Moraine, which is in fact buried by a layer of till in Peter's Woods. The hilly "knob and basin" relief of Peter's Woods is typical of a bisected till and moraine slope (Figure 3).

The northwestern section of the property consists of gently-rolling to moderately-sloping, derelict agricultural lands. The sandy and well-drained soils here support an extensive grass and forb cover. To the south lies an area of dry to mesic sandy soils which supports an upland forest community. This upland woodlot is bisected by a number of intermittent streams which flow into the swamp area lying along the eastern boundary of the reserve. Linear ridges with steep, poorly stabilized slopes separate these fluvial valleys. The largest valley, which reaches 30 m in width and 9 m in depth, contains an intermittent stream known as a "misfit" stream. This indicates that during post-glacial time, much greater volumes of water were carried by the waterway. The infrequency of boulder lag deposits in the stream beds suggests that the valleys were originally cut by much higher energy streams.

## Vegetation

The life science report for Peter's Woods (Dougan, 1975) identifies the following four distinct vegetation complexes in the nature reserve: a cedar swamp complex, a post-agricultural open field, a grazed meadowland and an upland woodlot (Figure 4).

The two environmental variables which have most directly influenced the formation of these vegetation complexes are soil moisture and slope. However, other ecological and historical factors, such as climate, geology, soil characteristics and human intervention, have also affected the vegetation type and distribution.

The following is a brief description of the physical characteristics of each vegetation complex and the flora associated with it. A more detailed vegetation checklist is available from the Ontario Ministry of Natural Resources District Office.







### Cedar Swamp Complex

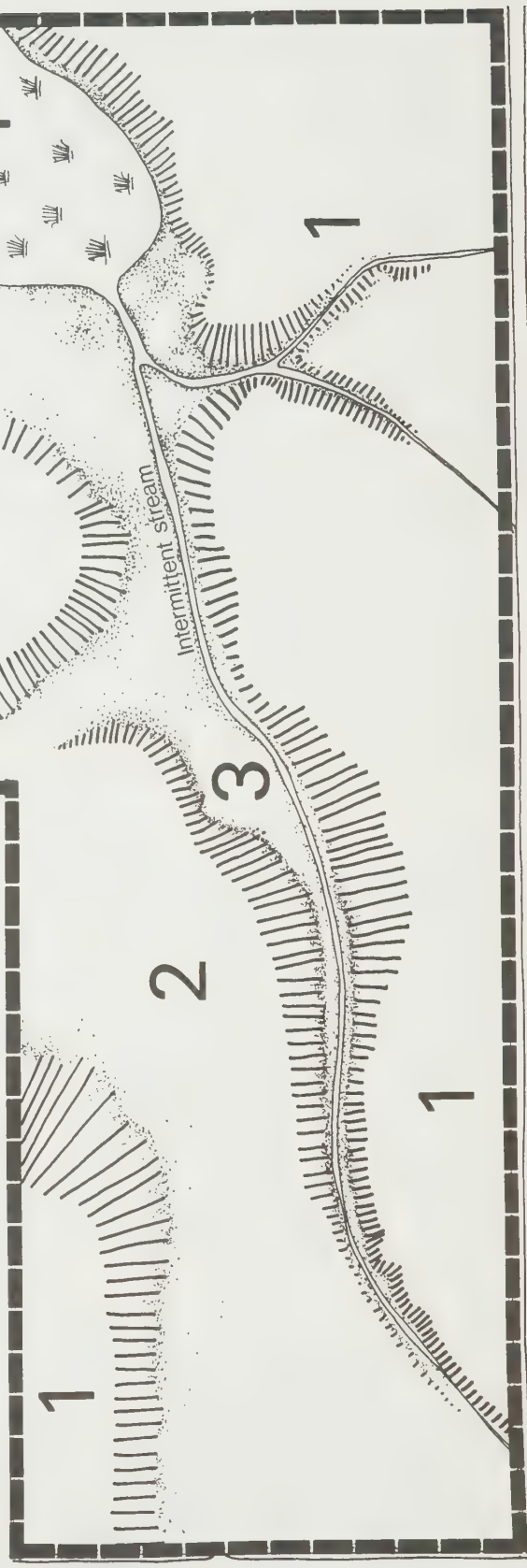
This community type lies at the base of a broad, poorly-developed drainage system, and consequently the vegetation cover is highly dependent upon the degree and quality of local drainage. The eastern portion of the community, well beyond the boundary of the park, is mesic to wet in nature. The canopy is virtually closed and consists mainly of cedar interspersed with balsam fir. The lack of light at ground level prevents the formation of any significant understory or groundcover, with the exception of the occasional herbaceous species.

Figure

3

### Geomorphology and Topography

-  Nature reserve boundary
-  1 Upland, gently rolling terrain
-  2 Flat, disused agricultural land
-  3 Bottomland, streambed
-  4 Lowland, marsh area
-  Indicates length of sloping terrain

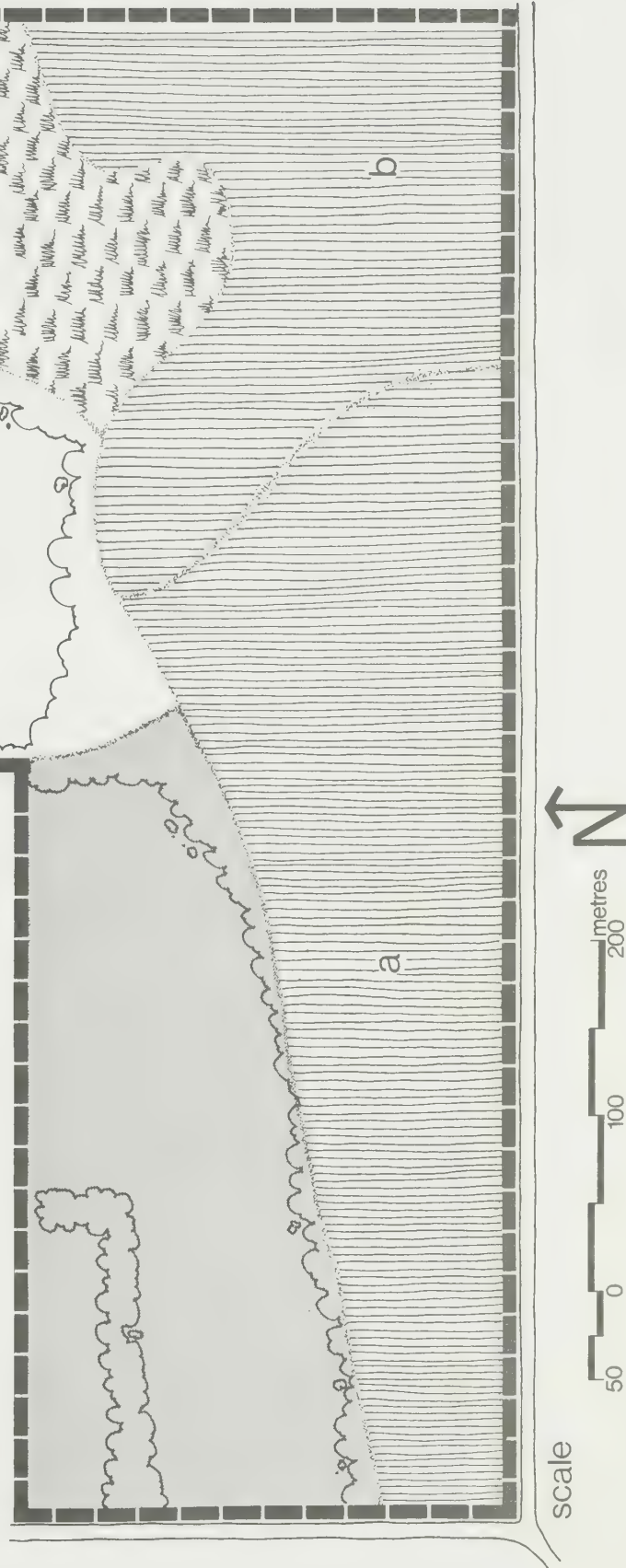
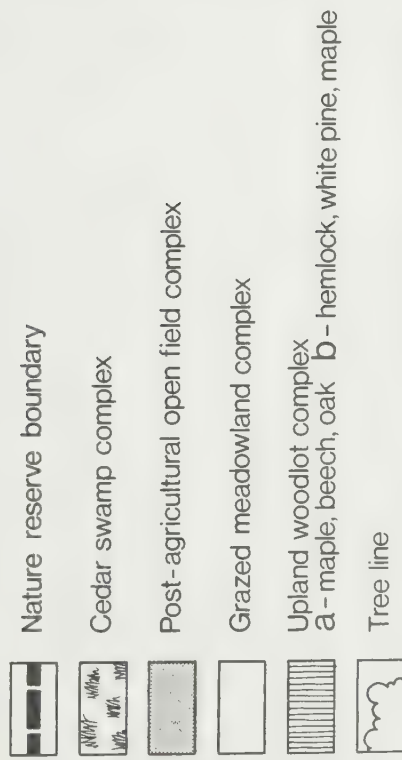




Figure

**4**

## Vegetation Complexes



Within the boundary of the park, the character of the cedar swamp complex changes considerably. The combined effects of wind, selective cutting and an unstable soil system have resulted in conditions ranging from "open muck with cattails and other marsh species to mixed wet mesic woods with coniferous species as well as maple, ash and yellow birch" (Dogan, 1975). At the western edge of this area, a narrow strip of dense cedar re-emerges as the dominant species; however, the canopy is not closed to the same degree as its counterpart farther east. Red ash and white birch grow among the cedar along the outer margins of this stand, and in one small section, mountain maple exists as a co-dominant species.

Much of the area just described has lush understory and groundcover. The excessive moisture provides excellent conditions for the growth of a variety of wild orchids, ferns, sedges and wildflowers. Common species include purple aster, yew, spotted touch-me-not, great blue lobelia, New Jersey tea, ostrich fern and bulblet fern.

#### Post-Agricultural Open Field Complex

The early successional stage of this abandoned farmland consists largely of grasses and perennial herbs, such as bluegrass, common ragweed and goldenrod. White pine and red oak, as well as white birch in a cut-over area, are regenerating along the southern fringe of the field. To the north, thick hedgerows of basswood, poplar, chokecherry, beech, maple and white birch combine with considerable sapling and shrub regeneration to form excellent nesting and feeding habitats for many birds. The species mix of this vegetation, commonly associated with old fence lines, is strongly influencing the regeneration of the adjacent field areas.

#### Grazed Meadowland Complex

This complex is situated in the northern section of the property. The area could not be easily cultivated because of its rolling terrain and has been used as pasture land. Consequently, it is in a latter stage of succession than the post-agricultural open field community. Regenerating white pine, cedar, aspen, birch and chokecherry are scattered throughout the meadowland and probably developed from the wind-carried seeds of the species in the adjacent hedgerow. Common milkweed, wild strawberry, bracken fern and a variety of grass and forb meadow species make up the groundcover in the area.

#### Upland Woodlot Complex

This vegetation complex occupies the deep, well-drained sandy soils of the southern portion of the property. Increasing soil moisture from west to east across the property largely contributes to the considerable variation in vegetation. Maple is virtually dominant throughout the area with associations of red oak, white pine, beech, white ash and hemlock on various sites.

The understory of the woodlot varies from young ironwood in the western, more elevated portions of the area to sugar and mountain maple on the sides of ridges. As a result of previous selective cutting, there is a notable absence of young to intermediate-aged trees, and the mature trees are so widely-spaced that the canopy closure is incomplete.

The groundcover in the area is relatively abundant and diverse, ranging from extensive growth of woodland sedges and grasses to a variety of ferns and wildflowers. Christmas fern, New York fern, spinulose wood fern, maidenhair fern, yellow adder's tongue, red and white trilliums, indian cucumber root, bellwort, wild ginger, sharp-lobed hepatica and bloodroot are some of the more common constituents of the ground flora. Also, a number of small, exotic plant species grow along the banks of the intermittent streams which transect the woodlot.

The sub-unit of hemlock, white pine and white birch, occupying the steep slopes and ridges adjacent to the cedar swamp complex, has a more open forest floor than the maple-beech-oak section of the woodlot. The sub-unit's ground flora consists of grasses and scattered herbs.

#### Hydrology

The relatively steep slopes, resulting from the fluvial erosion of glacial deposits, are the major factor determining the distribution of surface water in the nature reserve. The three small intermittent streams which occupy these fluvial valleys all flow into the cedar swamp complex located in the northeast section of the reserve. Runoff from the property's upland areas and from a number of springs is the source of these streams.

#### Wildlife

The variability of cover in Peter's Woods, from open swamp to coniferous forest to mature deciduous woods and to open fields lined with hedgerows, provides a diversity of habitats which should be capable of supporting a variety of wildlife species. Although a detailed inventory of the wildlife population at the nature reserve has never been conducted, the fauna is generally typical of that found in open fields and second-growth forests. Animals common to the reserve area include red fox, white-tailed deer, woodchuck, meadow vole, snowshoe hare, raccoon, short-tailed weasel, red squirrel, chipmunk, song sparrow, marsh hawk, great horned owl, eastern bluebird, house wren, red-winged blackbird, red-tailed hawk and morning dove. There are also a number of reptilian species represented in the area, including American toad, leopard frog, brown snake and garter snake.



## Cultural Resources

### Prehistory

A recent archaeological survey of Peter's Woods Provincial Nature Reserve indicates that there are no archaeological or historical resources of any significance on or near the reserve property. The report concludes that:

no evidence of aboriginal or early European cultural material was recovered. It must be admitted, however, that there was little expectation of discovery. Accessibility in earlier times was very low, particularly in light of the suggestion that the stream was never a major waterway. It is therefore unlikely that in the event of park development any archaeological resources would be damaged or destroyed (Burns, 1972, p.3).

### Early Settlement

The sequence of events in forest depletion and settlement common to eastern Canada also occurred in the Peter's Woods region. Pine and oak were used for ships' masts and square timber, forests were subjected to the cutting of timber for commercial purposes, and during the late 18th century and half of the 19th century, the land was cleared by settlers for agricultural purposes. Throughout this period, the forests were considered an inexhaustible resource, and timber harvesting was purely a mining operation.

By the early 1900s, however, the mature hardwood forests of the region had virtually disappeared, and the few remaining, relatively natural woodlots, such as Peter's Woods, began to emerge as significant features with aesthetic, historical and botanical value.

Because the region's forest resource had been depleted and large portions of the cleared land had proved to be unsuitable for continuous agricultural production, reforestation was recommended for the area. In 1924, Northumberland County and Durham County entered into an agreement with the Province of Ontario for the management of a 409-ha reforestation area in Haldimand Township. A second agreement, covering a 20-year period and encompassing nearly 2,023 ha of forest in Northumberland County, was signed April 1, 1961.

## Environmental Significance

From the description of the biophysical resources of Peter's Woods, it is evident that the significance of the reserve is dependent upon its life science features. The deciduous forest community of the nature reserve is representative of a relatively natural maple-beech dominated woodlot on dry to mesic sandy soils in Site Region 6E of G.A. Hills' Site Region System for Ontario (Hills, 1959 ). Hills' site region methodology has been adopted as the framework for determining the representative units necessary to the Provincial Nature Reserve System. The methodology divides the province into 13 site regions, each characterized by a narrow range of climatic effects and broad correlations in vegetation, soils and landforms.

Of lesser but still significant value is the potential of the woodlot to approximate undisturbed stand characteristics in a reasonable length of time. Undisturbed forest stands are the most difficult natural features to represent in the Provincial Nature Reserve System in Southern Ontario. With this in mind, the upland woodlot of Peter's Woods would be the most valuable feature.

Although the other vegetation communities of Peter's Woods (i.e. the cedar swamp complex, the post-agricultural open field and the grazed meadowland) increase the variety of representation on the reserve, they do not have any special individual significance at present. They do, however, provide the opportunity to monitor and record natural successional changes in the nature reserve from a very early stage and, as such, contribute to one of the fundamental objectives of the Provincial Nature Reserve System. The open field communities of the reserve should be particularly well-suited to a study of succession because they contain a diversity of site types and, because of the proximity of the forest complex and the mature woodlots, are accessible to a wide variety of seed sources.

The earth science resources of Peter's Woods are typical of the surrounding landscape. Furthermore, as a result of its small size, the reserve does not contain a complete geomorphological feature. It does, however, contain many interesting landforms representative of the area which could be incorporated into the interpretive program of the nature reserve.

## Enviromental Analysis

Environmental analysis is based on the philosophy that the physical components of the natural environment and the biotic communities which they support should have the greatest influence on the type of environmental development and use. The primary objective of environmental analysis is to identify the effect that varying degrees of development and use will have on the natural environment and, based on this assessment, to recommend the appropriate level and intensity of use. The subsequent development and use should provide the desired recreational experience, while exercising a minimal impact on the natural environment.

Soil type, compaction resistance, relief, drainage, erosion, the composition and functioning of the plant and animal communities, past disturbance and special features are the factors which determine the level and intensity of use that the natural system can tolerate without being pushed beyond its recuperative threshold. Change exceeding this threshold damages the functioning of the ecosystem and ultimately reduces the quality of the recreational experience.

The nature reserve has been divided into units based on environmental limitations and the ability of the area to withstand varying degrees of development and use (Figure 5). The three basic unit designations are described as follows:

### High Constraint Areas

High constraint areas contain unstable physical conditions or fragile earth or life science features. Development in these areas should be discouraged. Peter's Woods contains the following high constraint areas:

#### H1 Cedar swamp complex

- fragile vegetation susceptible to trampling. (vegetation is dependent upon existing poor drainage.)
- subject to severe soil compaction.

#### H2 Upland ravines

- susceptible to severe erosion. (vegetation is sparse, and the ground is protected by an easily destroyed layer of decaying leaf litter.)
- steep, unstable slopes.

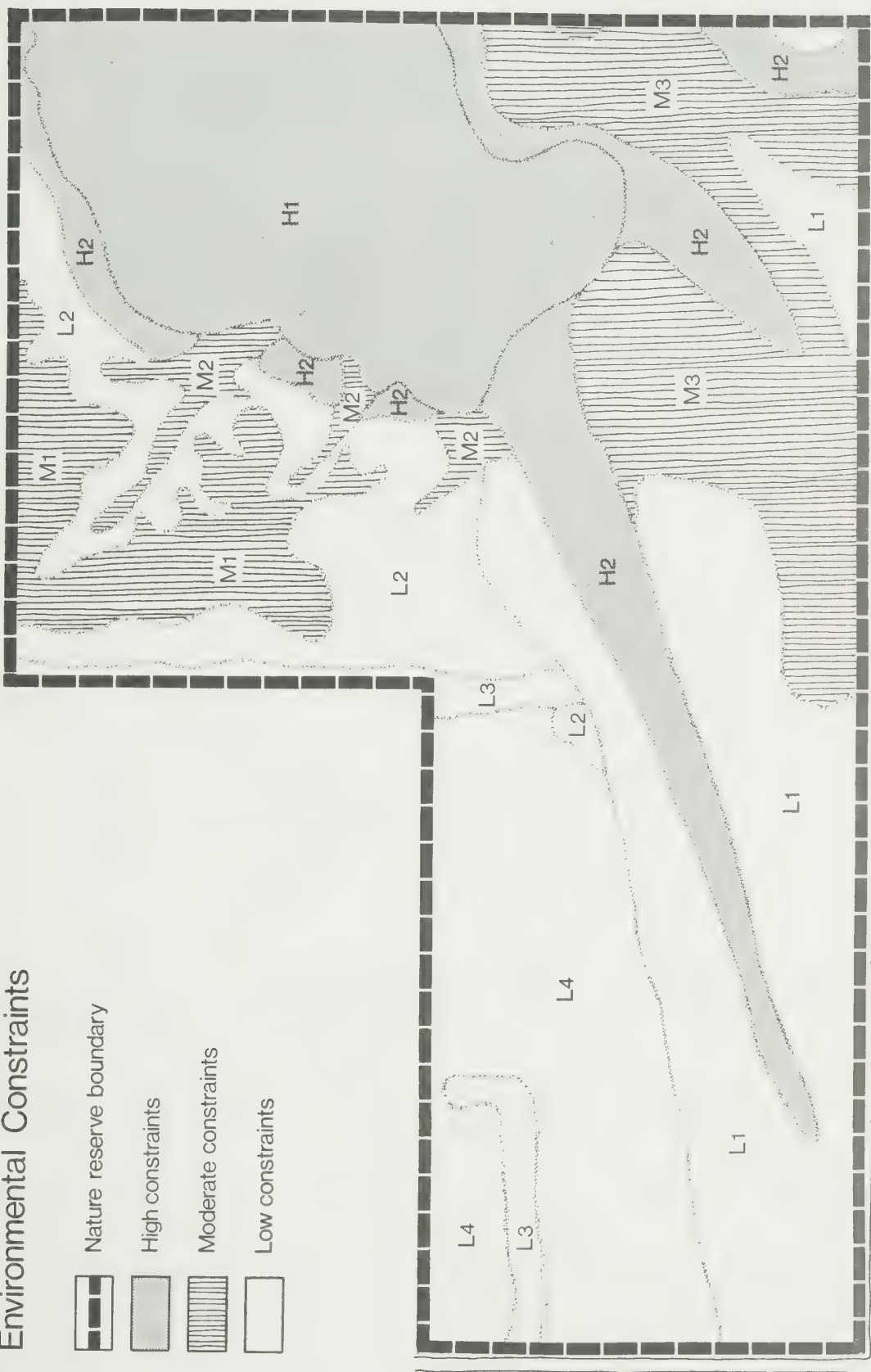
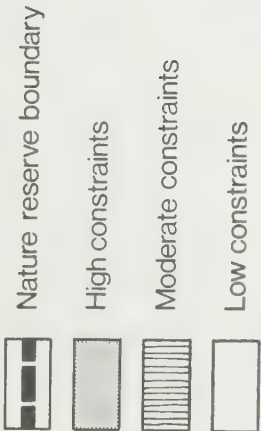
### Moderate Constraint Areas

These areas contain environmental constraints, but can tolerate a limited amount of development. Development requiring extensive landscape modification, however, should not be considered for this area. The moderate constraint areas are described as follows:

Figure

5

Environmental Constraints



scale





- M1 Forb-lichen meadow
  - fragile vegetation susceptible to trampling (lichen-forb community).
  - slow regeneration of damaged vegetation because of the highly stressful environment (upland terrain with a dry sandy substrate).
- M2 Low, wet grassy meadows
  - sensitive moisture regime.
  - subject to soil compaction.
- M3 Mesic to wet forested area
  - subject to soil compaction.
  - fragile vegetation susceptible to trampling and collecting (fern and orchid species).

#### Low Constraint Areas

These areas are relatively stable and capable of withstanding a moderate amount of development without causing serious environmental problems. There are, however, certain environmental limitations which should be considered prior to development. The nature reserve contains the following low constraint areas:

- L1 Mesic to dry mesic forested uplands
  - subject to soil compaction
  - susceptible to erosion. (ground flora is sparse, and the thin soil layer is protected only by surface litter.)
- L2 Gently rolling grassy meadow
  - subject to erosion if the relatively hardy groundcover is removed.
- L3 Hedgerows
  - subject to soil compaction
  - disruptive of wildlife.
- L4 Past agricultural open field community
  - fragility of the regenerating seedlings (oak, white pine and silver birch).

## Nature Reserve Policy

Peter's Woods Provincial Nature Reserve was established to preserve and perpetuate, in a relatively natural condition, a forest complex and adjacent non-forested lands (i.e. a segment of Ontario's natural heritage). Essentially, the nature reserve will serve as a benchmark area against which the effects of environmental change can be measured. It will preserve species and features for their intrinsic value and for their potential application to science.

As a nature reserve, Peter's Woods will be managed in such a way as to ensure that its natural features are allowed to evolve and change with minimal human manipulation. Intervention will occur only when the integrity of the resource is threatened (i.e. fires or insect and disease outbreaks) or when the safety of the reserve visitor is jeopardized (i.e. hazardous trees and branches adjacent to the interpretive trail).

Activities permitted in Peter's Woods will be restricted to those which, within strict management constraints, can further scientific research and generate visitor understanding of the natural features and ecological processes of the nature reserve. Only minimal facilities, necessary to facilitate these activities, will be provided.

### Goal

The goal of Peter's Woods Provincial Nature Reserve is to perpetuate, in a relatively natural condition, the succession of a forest complex and adjacent non-forested lands for scientific research, environmental education and natural history interpretation.

### Objectives

-To establish a nature reserve which will be an integral part of the Provincial Parks System and, more specifically, an integral part of the Provincial Nature Reserve System.

-To maintain Peter's Woods as a benchmark and to encourage the completion of a comprehensive inventory of the soils, flora, fauna and other biophysical components of the nature reserve.

-To provide the opportunity for constructive scientific research and the monitoring of the ecological processes affecting the nature reserve.

-To establish a system which will record over a period of time the successional changes of the various habitats found in the nature reserve.

-To collect environmental data which will assist in the management of Peter's Woods and other similar environments in the Nature Reserve System.

-To establish a visitor services program which will concentrate on self-use facilities and provide information and opportunities for the appreciation of nature through education and interpretation.

#### Classification

Peter's Woods is designated as a provincial nature reserve according to the Ontario Provincial Parks Classification System (1975). Nature reserves are established primarily to protect both representative and special examples of life and earth science features. Peter's Woods will be planned, zoned and managed in accordance with the policies for the nature reserve classification.

#### Zoning

The nature reserve has been divided into two zones based upon the zoning system established in the Administrative Policies of the Ontario Provincial Parks System: Nature Reserves in Ontario (Preliminary) (Figure 6). The zones are intended to differentiate the degree of development, recreational uses and management practices permissible within different areas of the park. Peter's Woods includes the following zones:

##### Access Zone

The access zone is located in the northeast corner of the park property and provides access to the park. Development will be limited to those basic facilities necessary for day-use visitors and scientific research, including roads, parking lots, sanitary facilities and trails. Extended-use facilities will not be provided.

##### Nature Reserve Zone

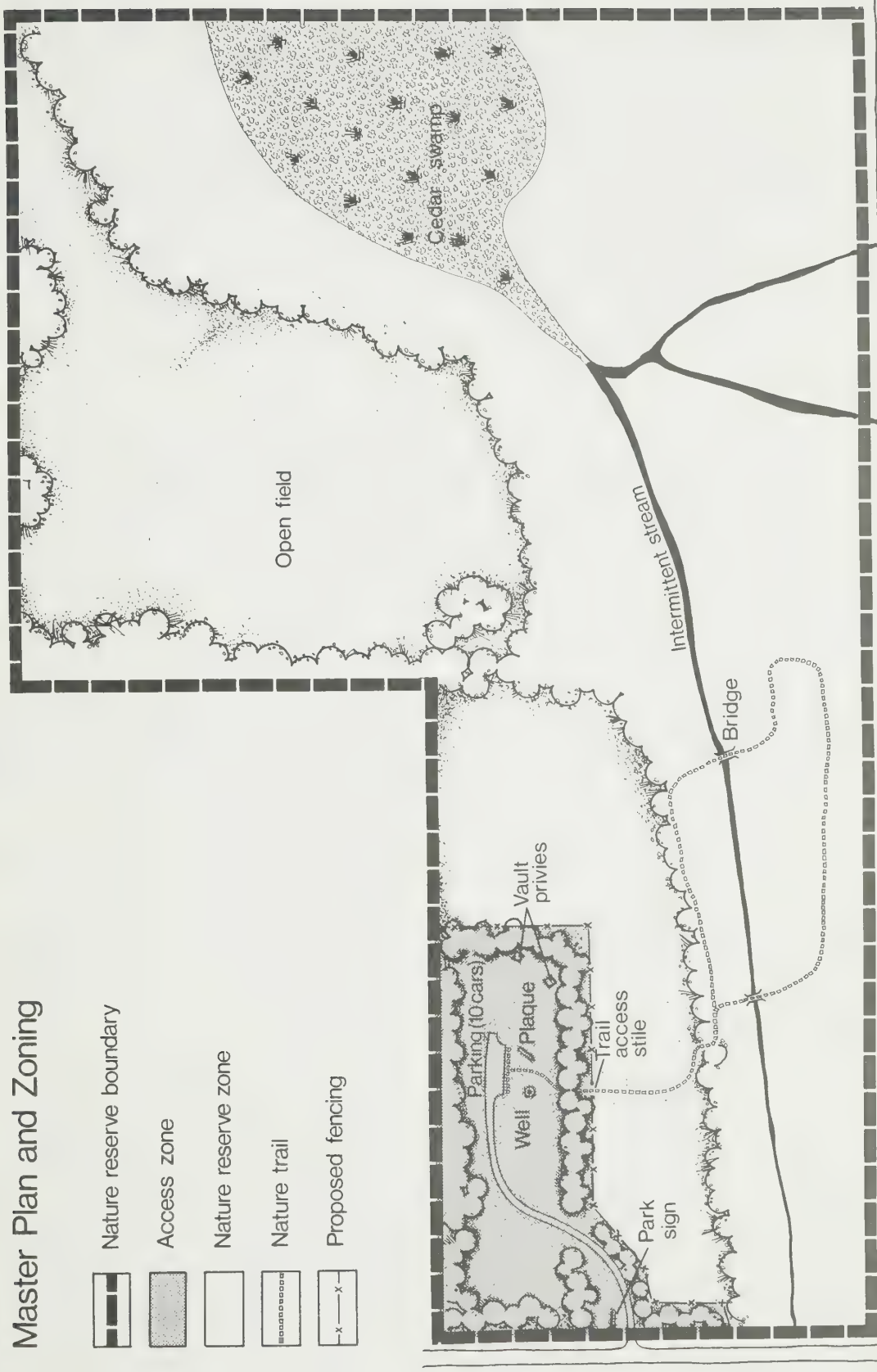
Most of the park will be designated as a nature reserve zone. The primary purpose of the zone will be to incorporate and protect the essential natural features of the park. Development in this zone will be minimal, and no permanent facilities other than trails and related interpretive signs and displays will be permitted. Under special circumstances, however, sites may be designated for the location of temporary research or educational facilities in the nature reserve zone.

Figure

6

# Master Plan and Zoning

- Nature reserve boundary
- Access zone
- Nature reserve zone
- Nature trail
- Proposed fencing



scale





## Development Program

The purpose of this section of the master plan is to establish the basic framework for and interrelationships of access, parking areas, sanitary facilities and interpretive trail system for the nature reserve.

The development program of the nature reserve has been restricted to providing those basic facilities necessary to facilitate interpretive, educational and scientific uses (Figure 6).

## Access Zone

In an effort to limit development to an area removed from the more important natural features of the nature reserve, the majority of the facilities have been located in the designated access zone. A gravel entrance road, parking spaces for 10 vehicles, two vault privies, a well for drinking water and the starting-point for the interpretive trail system have been provided in this area. Should the demand arise in the future, these facilities could be expanded. A park sign indicating the name and jurisdiction of the park has been erected at the park entrance.

A plaque recognizing the contribution of the Willow Beach Field Naturalist Club, commemorating A.B. "Peter" Schultz and illustrating the philosophy of the nature reserve program will be situated in a prominent location adjacent to the trail access point. The design of the plaque will be similar to the one at Mark S. Burnham Provincial Park (i.e. a bronze plate on a fieldstone base).

Generally, signs within the park will be kept to a minimum and used primarily to promote public safety and interpretation and to protect ecologically fragile areas. Signs are to be constructed with natural materials and the colours are to be consistent with those of the Ontario Provincial Parks System.

## Fencing and Buffer Planting

The park property has been enclosed on the northern, southern and western boundaries with split cedar rail fencing. The eastern boundary of the park has not been entirely fenced; however, this should not create a security problem because the area is an extremely dense cedar swamp complex, thus making access very difficult. The fencing is intended not only to provide an attractive boundary but also to provide a barrier against indiscriminate access and trespass onto neighbouring properties. The particular fence material and design used at the park conform to the type of fencing characteristic of the area.

Split cedar rail fencing will also be constructed around the entire designated access zone. The complete enclosure of this area and the employment of an entrance gate or stile to control access to the interpretative trails will prohibit incompatible users (i.e. snowmobilers and trail bikers) from entering the nature reserve zone and will also encourage hikers to remain on the established trail. Native trees and shrubs will be planted around the boundary of the access zone to provide a physical, visual and auditory barrier. The existing hedgerows and tree stands in the access zone will be thickened to create a more effective buffer. Only indigenous species that are presently established in the nature reserve will be planted.

### Interpretive Trail

The trail, when completed, will be a self-use facility with trail guide publications and signage providing interpretation. The trail will provide opportunities for hiking, walking for pleasure and other recreational activities, such as photography, painting, nature study and appreciation. Access to the interpretive trail through the stile will present a physical and psychological barrier to inappropriate uses of the nature reserve.

The portion of the trail which has been completed was designed by the members of the Willow Beach Field Naturalist Club in co-operation with Ministry staff. The trail originates in the access zone, passes through the open field area and circles through the maple-beech-oak forest community (Figure 6). The trail traverses the intermittent stream flowing through this area. Two wooden bridges have been constructed to accommodate passage.

A number of sitting benches of simple wooden construction with natural finishes will be established in locations which provide strategic resting places and scenic viewing.

Care was taken during the construction of the trail to remove or disrupt as little of the existing vegetation as possible. No trail surfacing or reinforcement material has been used on the trail. However, careful monitoring will be necessary to evaluate user impact on the trail and adjoining natural features. In the event of excessive environmental change, certain management techniques may be necessary. Sections of the trail beginning to show signs of excessive wear may be reinforced with wood chips or, if the impact is excessive, the trail may be closed. Alternative routes may be created to allow sections to be temporarily closed so that regeneration may occur. Cedar log steps may be required on those sections of the trail ascending and descending the steeper slopes to accommodate access and to prevent unnecessary soil erosion and vegetation damage. Furthermore, where the ground is wet and marshy, short lengths of boardwalks may be constructed.

The trail will eventually be expanded to provide access to the remainder of the park property. This development could be

accomplished by extending the existing trail, by developing another trail which originates in the access zone or by providing a combination of the two alternatives. Consideration should also be given to the development of a perimeter trail which takes advantage of the concession road just south of the park. Although the road is not located within the park boundary, it provides a pleasant walking path and may be incorporated into the trail system. An agreement with the local government would be necessary prior to the implementation of this development. Regardless of the method of expansion, however, careful planning and design of the trail will be necessary to minimize the impact of the trail and its use on the ecologically sensitive features in the area.

## Visitor Services

The purpose of this section is to outline the scope and intent of the visitor services program for Peter's Woods Provincial Nature Reserve. As the master plan is implemented, a visitor services program will be developed based on the guidelines provided in this section.

### Communication

The provision of a basic communications systems will be essential for the reserve. There are three types of messages that should be communicated to the park visitor:

- Messages which discuss the policies and programs of the Ontario Ministry of Natural Resources, particularly those related to the Provincial Nature Reserve System. For example, a brochure could be produced explaining the philosophy and objectives of the Provincial Nature Reserve System.
- Messages which explain nature reserve management and operating policies and decisions. Communications of this nature should illustrate to the visitor which specific management methods are used in the reserve and how these affect the reserve environment and the visitor. An extensive explanation of the nature reserve's rules and regulations should be included in this message.
- Messages which convey to the visitor that the comments and reactions concerning his experience in the nature reserve will be received by management. Effective visitor feedback will promote future planning and management responsive to visitor needs and preferences. Possible techniques for retrieving information and monitoring visitor feedback, use, activity participation patterns, motivations and attitudes include mail-in questionnaires, an on-site questionnaire box, an on-site guest book and informal public meetings with naturalists and other user groups.

### Interpretation

Interpretation in Peter's Woods will generally be low-key. Emphasis will be placed on interpreting the most significant natural features of the reserve and illustrating their importance within the context of the Provincial Nature Reserve System. A self-use trail system with associated signage, trail guide publications and displays will provide the medium for interpretation.



The nature reserve will be attractive to both the competent naturalist and to visitors who have little knowledge of the natural environment. Therefore, the interpretative program should be advanced enough to increase the knowledge of the informed naturalist, but at the same time basic enough to hold the attention of the uninformed visitor.

#### Outdoor Education

Outdoor educational field trips by organized groups (i.e. schools, boy scouts, etc.), will be permitted in the nature reserve. However, only small groups with particular interest in the resources of Peter's Woods will be encouraged. Group use of the reserve will be carefully monitored, and if adverse environmental impacts are detected, this service will be severely restricted or curtailed. The curricula and teaching will be the responsibility of the teacher or group leader; however, resource information will be available from Ministry staff.

#### Recreational Programming

Recreational programming will not occur in Peter's Woods; however, the reserve will provide opportunities for the enjoyment of passive leisure-time pursuits. These activities may include hiking and walking for pleasure, personal hobbies, such as painting or photography and nature study and appreciation.

#### Research

Scientific research by qualified educational groups and individuals will be encouraged in Peter's Woods. Studies providing a continuous monitoring of the ecological processes affecting the nature reserve and recording the successional changes of the various habitats of the area will contribute significantly to the body of knowledge associated with the Provincial Nature Reserve System.

Similarly, there will be considerable scientific value in completing a comprehensive inventory of the soils, flora, fauna and other biophysical components of the nature reserve. Methodologies and techniques for conducting these recommended research studies are described in the Environmental Impact Monitoring section of the master plan.

Individuals and institutions wishing to utilize Peter's Woods for research will be required to comply with Ministry policy on research activities in provincial parks and wilderness areas.

## Park Operation and Management

### Staff

Although no full-time staff will be assigned to Peter's Woods Provincial Nature Reserve, the majority of the management and operation functions of the nature reserve will be performed by Ministry staff cross-appointed from the Northumberland County Forest. Funding and resources will be allocated by the District Park's Operation Budget to accommodate this cross-appointment. However, Ontario Ministry of Natural Resources district staff will regularly patrol the property and enforce the nature reserve regulations as authorized by The Provincial Parks Act.

### Maintenance

County Forest staff will conduct a periodic inspection of the park facilities to ensure that they are operating efficiently and safely. Any facility in need of maintenance (i.e. repairs to fencing, pumping out and cleaning of vault privies, replacement of signs, surfacing of trails, etc.) will be attended to.

In addition, an annual inspection of the nature reserve should be made by the Division of Forests staff to ensure that any changes in the insect population or the spread of vegetative disease are detected. The necessary control measures to curb hazardous conditions will be promptly implemented.

Forest fire prevention and control measures will be carried out by County Forest staff in accordance with the Forest Protection Plan for the Northumberland County Forest.

## Recreational Management

Recreational management of the nature reserve is intended to provide low-intensity recreational opportunities (i.e. hiking and walking for pleasure, interpretation and nature study, photography and painting, etc.). Although this task seems relatively simply, there are some uses and situations that may require special regulations or detailed policies.

The general management philosophy of the nature reserve is to ensure that the natural features are allowed to evolve without unnecessary human interference. To this end, trail bikes, dune buggies, snowmobiles and other all-terrain vehicles will be prohibited in the reserve. Hunting, trapping and the collection of animal and vegetative species will also be prohibited within the nature reserve.

Picnicking facilities (i.e. tables, barbecue pits, etc.) will not be provided in the nature reserve because they could encourage inappropriate uses. Garbage cans will be provided only in the access area, with a carry-out program encouraged for the nature reserve zone.

Winter use of the nature reserve will be permitted, but it will not be encouraged. The parking area will not be plowed for vehicle access; however, the vault privies will be operational. As stated previously, snowmobiles and other mechanized vehicles will be prohibited from the reserve.

## Resource Management

In order to achieve the nature reserve goal of perpetuating the natural environment, it will be necessary to carry out a program of resource management. Based on the inventory and analysis of the environmental information and the management policies outlined in Administrative Policies of the Ontario Provincial Parks System: Nature Reserves in Ontario (Preliminary), a number of guidelines for the resource management program have been formulated. A detailed resource management plan, based on these guidelines, will be developed by a technical team composed of District and Regional Ministry of Natural Resources staff.

## Forest and Vegetation Management

- The nature reserve will be allowed to follow the natural ecological processes of growth, decay and regeneration.
- The introduction of indigenous and exotic vegetative species will not be permitted in the nature reserve zone. Buffer planting, however, will be an acceptable management practice in the access zone. Only species that are currently established in the nature reserve will be planted.
- Commercial timber harvesting and prescribed vegetation burning will not be permitted.
- Selective cutting and pruning will be carried out to remove hazardous trees and branches on the trail. However, in those sections which are not near the trail corridor, dead trees will be allowed to remain undisturbed, because they provide an excellent habitat for birds and other wildlife.
- Limited environmental manipulation (i.e. trail surfacing, fertilizing, mulching and the development of facilities such as boardwalks, bridges and log steps) will be permitted in order to reduce environmental impact and to ensure the continued existence of natural processes.
- Fires of both natural and man-made origin, which threaten the resources and values of the nature reserve, will be controlled and extinguished. Methods and types of equipment used in fire suppression will be detailed in the Northumberland County Forest Fire Control Plan. (Peter's Woods must be formally included for protection under the Forest Protection Plan for the Northumberland County Forest).
- The control of insects and vegetative diseases will be permitted in the nature reserve where there is evidence that lack of control will cause irreparable damage to the natural resource. The use of a biocide will be considered only when other means of control are not feasible.



## Wildlife Management

- Indigenous and exotic species will not be introduced into the nature reserve.
- Habitat management to provide for wildlife-viewing opportunities will not be carried out.
- Animal control will generally be limited. Natural selection will be the major controlling influence on animal populations. Management policies may be necessary, however, to control animal populations where they are a threat to the natural values of the reserve.
- Hunting and trapping will not be permitted.
- The wildlife resources will be sustained by avoiding the unnecessary disturbance or destruction of wildlife habitat.

## Environmental Impact Monitoring

Any recreational activity that takes place in the natural environment places stress upon that environment through an alteration of natural energy flows. This stress or impact will express itself as some change in the biotic or abiotic environment (Rodgers, 1975, p.19). Consequently, the development and use of the interpretative hiking trail at Peter's Woods will result in certain environmental impacts.

Because Peter's Woods is a nature reserve with a goal of perpetuating natural ecological processes, it is essential that the impacts causing change in the environment be minimized. However, prior to initiating any management technique to reduce environmental stress or to ensure the continued existence of natural processes, the exact type of impact and the resulting changes must be assessed. Therefore, a comprehensive program evaluating environmental change should be established at Peter's Woods.

The following two methodologies are recommended for monitoring environmental impact: the development of a photographic library and the analysis of study plots located at various points along the trail.

A photographic library illustrating the environmental changes over a period of time could be established by taking photographs three or four times annually at selected locations along the trail. The depletion of plant cover, changes in trail width, erosion, damage to trees and the accumulation of litter and garbage could all be permanently recorded by this process.

The analysis of a number of standard transect study plots located at strategic points along the trail could provide an indication of changes in the biological functioning of vegetation, shifts in the species composition of plant communities, degree of soil compaction and other disruptions to the ecosystems.

It is suggested that the study plots, located in such a way as to represent the various biotic and abiotic features encountered along the trail corridor, be surveyed once or twice a year on a continuing basis. Ministry staff, members of the Willow Beach Naturalist Club, institutional researchers or a combination of these groups could be involved in this project (see guidelines for scientific research in the Visitor Services section of this master plan).

These research techniques could also be adapted to the monitoring of successional change in Peter's Woods. The nature reserve will be managed to allow natural succession to take its course, and in order to obtain the maximum benefit from this approach, the environmental changes of the various habitats in the area should be continuously and systematically monitored. At least four study plots should be

established in the reserve with one located in each of the four distinctive vegetation communities. A series of photographs taken three or four times annually could effectively record environmental changes occurring in these monitoring stations. Similarly, an indepth survey of the study plots, once or twice a year on a continuing basis, would provide further details on changes in the biological functioning of vegetation, shifts in species composition of the plant communities and changes in the functioning of the other biophysical components of the habitat.

The information retrieved from the research programs must be correlated with other factors, such as the number and distribution of trail users, the character of the natural environment and climatic and seasonal changes. A management decision can then be made to determine what level of environmental change will be tolerated, the allowable level of use and the techniques necessary to ensure that the biological carrying capacity of the reserve is maintained.

Some of the management techniques consistent with the philosophy of the nature reserve include: limited environmental manipulation (i.e. trail surfacing, fertilizing and mulching); facility development (i.e. boardwalks and log steps) and restraints on the user and use (i.e. controls on the number of visitors, group size, visitor locations and visitor behaviour). Other techniques for managing natural processes, such as controlled burning and ecosystem manipulation (i.e. the intentional introduction or eradication of plant or animal species) are not acceptable practices in the nature reserve.

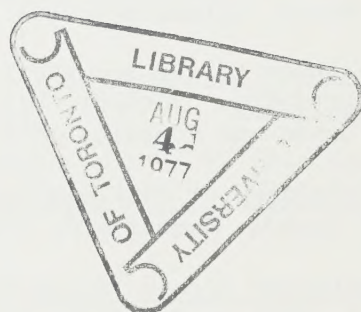
#### Master Plan Review

As an established Ministry policy, this master plan will be reviewed every five years and will be completed as funds and priorities permit.

## References

- Bean, D. Landform Survey of Peter's Woods Park Reserve. Lindsay, Ontario Ministry of Natural Resources, 1972.
- Burns, J.A. Archaeological Survey of Settler's Woods Provincial Park. Lindsay, Ontario Ministry of Natural Resources, 1972.
- Calverley, R.C. History of Settler's Woods. Lindsay, Ontario Ministry of Natural Resources, 1971.
- Dagg, A.I. Mammals of Ontario. Waterloo, Otter Press, 1974.
- Dougan, J.M. Peter's Woods Provincial Nature Reserve: A Life Science Report. Toronto, Ontario Ministry of Natural Resources, 1975.
- Godfrey, W.E. The Birds of Canada. Natural Museum of Canada Bulletin 203, Biology Series 73, 1966.
- Gravenor, C.P. Surficial Geology of the Lindsay-Peterborough Area, Ontario, Victoria, Peterborough, Durham and Northumberland Counties, Ontario Geological Survey of Canada, Memoir 288, 1957.
- Hewitt, D.F. and B.A.Liberty. Paleozoic Geology of Southern Ontario. Ontario Division of Mines, Colour map 2254.
- Hills, G.A. A Ready Reference to the Description of the Land of Ontario and its Productivity. Toronto, Division of Research, Ontario Ministry of Lands and Forests, 1959.
- Liberty, B.A. Paleozoic Geology of the Lake Simcoe Area, Ontario. Geological Survey of Canada, Memoir 355, 1969.
- Middleton, H.N. Northumberland County Forest Operating Plan for the Second Decade April 1, 1972 to March 31, 1982. Richmond Hill, Ontario Ministry of Natural Resources, 1972.
- Northumberland Area Task Force Technical Committee. Final Report on the Preferred Development Strategy for the County of Northumberland. Toronto, December 1975.
- Ontario Ministry of Natural Resources. Administrative Policies of the Ontario Provincial Parks System: Nature Reserves in Ontario (Preliminary) Toronto, Park Planning Branch, 1975.
- Rodgers, G. Recreation in Natural Environments (Unpublished Major Paper). Faculty of Environmental Studies, York University, Toronto, 1975
- Rogers, R.M. Settler's Woods: An Ecological Evaluation. Toronto, Ontario Ministry of Natural Resources, 1971.









Ministry of  
Natural  
Resources

Hon. Frank S. Miller  
Minister

Dr. J. K. Reynolds  
Deputy Minister

June, 1977

